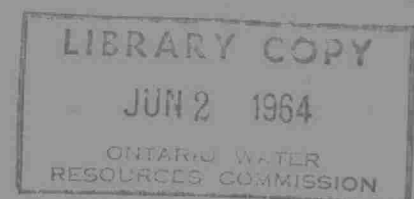




THE
ONTARIO WATER RESOURCES
COMMISSION
REPORT ON
MUNICIPAL SANITARY SURVEY
CITY OF OSHAWA

NOVEMBER 1963



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REPORT ON
MUNICIPAL SANITARY SURVEY
OF THE
CITY OF OSHAWA

November 7, 12, and 13,
1963

MUNICIPAL SANITARY SURVEY

of the CITY OF OSHAWA

INTRODUCTION

Investigations were performed at the City of Oshawa by Commission staff on November 7, 12 and 13, 1963, in order to review conditions existing within the municipality which might affect the quality of the pertinent watercourses which are Oshawa Creek, Harmony Creek, and their tributaries.

A previous municipal sanitary survey of the City of Oshawa had been performed by OWRC staff during the period of September 15 to December 2, 1958. The purpose of this recent survey was to determine if the conditions revealed during the previous survey have improved, have deteriorated, or if they remain unchanged. Therefore, samples were collected from outfalls and from the pertinent watercourses at selected locations. The locations of sampling points are shown on the appended map of the City of Oshawa.

Officials of the City of Oshawa are pursuing an active program in an attempt to eliminate all objectionable waste discharges from watercourses within the city.

GENERAL

Interviews were held with the following officials during the survey:

Mr. L. R. Barrand, City Clerk;
Mr. F. E. Crome, P. Eng., City Engineer;
Mr. K. Kearns, P. Eng., Assistant City Engineer;
Mr. T. E. White, P. Eng., Assistant Superintendent of the Board
of Works;
Dr. C. C. Stewart, Medical Officer of Health;
Dr. J. E. Watt, Supervisor of Environmental Sanitation, City Health
Department.

THE CITY OF OSHAWA

Oshawa has an area of 14,000 acres and a population of 63,022, according to the 1963 Municipal Directory.

The city is served by a municipal water works system with Lake Ontario being the source of supply.

Systems of sanitary sewers conduct sewage flows to the municipal sewage treatment plant which discharges its effluent to Harmony Creek near the mouth of the watercourse.

Municipal storm sewers discharge to Oshawa Creek, Harmony Creek, or their tributaries. Some surface run-off flows undoubtedly drain to Lake Ontario.

Industrial wastes generally are discharged to municipal sanitary sewers, with some of these flows gaining access to storm sewer systems. An exception is at the Robson Leather Company Limited plant where untreated or partially treated industrial wastes are discharged to Oshawa Creek. A drain extends from the General Motors Limited assembly plant to Lake Ontario.

Reportedly, private sub-surface sewage disposal systems are employed in some outlying sections of the city.

WATER SUPPLY

The municipal water purification plant, which is operated by the Oshawa Public Utilities Commission, is located in the extreme southern section of the city. The source of supply is Lake Ontario.

Low and high lift pumping units are utilized at this plant. Treatment consists of screening, coagulation, rapid sand filtration and chlorination. Pre-chlorination, post-chlorination and fluoridation are practised. Activated carbon is used intermittently for taste and odour control.

In some outlying areas of the city, water is obtained from private wells.

SEWAGE WORKS

Sanitary sewage and some industrial wastes are conducted by the municipal sanitary sewer system to the municipal sewage treatment plant which is located near Harmony Creek in the south-eastern part of the municipality. The system utilizes gravity flow with four inverted syphons being employed to deliver sewage from the western section of the municipality under the bed of Oshawa Creek to trunk sewers leading to the sewage treatment plant. Each of these syphons is provided with an overflow arrangement which would permit the emergency discharge of sewage to Oshawa Creek.

Sewage Treatment Plant

The sewage treatment plant was constructed in 1955 and employs the biological filter process. Various changes have been made to the plant, increasing its capacity to the present rate of 8.5 million U.S. gallons per day. The effluent is discharged to Harmony Creek and is chlorinated in the summer months.

The table below contains a summary of the results of sanitary chemical analysis of composite samples submitted to the Ontario Water Resources Commission Laboratory by the plant operator during recent months:

<u>Date</u> <u>1963</u>	<u>Raw</u>	<u>5-Day BOD (ppm)</u>			
		<u>Primary</u> <u>Effluent</u>	<u>Removal</u> <u>Percent</u>	<u>Final</u> <u>Effluent</u>	<u>Removal</u> <u>Percent</u>
May 30	205	55	73	29	86
June 26	145	40	72	27	81
August 19	100	34	66	18	82
<u>Suspended Solids (ppm)</u>					
May 30	406	96	76	37	90
June 26	242	78	67	31	87
August 19	148	90	31	25	83

The previous figures indicate a normal degree of operational efficiency for this type of plant.

INDUSTRY

Numerous industrial firms are located within the City of Oshawa. Wastes from these industries generally are discharged to the sanitary sewers. However, the analyses of samples collected from municipal storm sewer outfalls indicate that industrial wastes are discharged to the storm sewers in some instances.

The Robson Leather Company Limited plant is not served by the municipal sanitary sewers and discharges its waste directly to Oshawa Creek. Some of this waste receives a degree of treatment on the premises. It is probable that these industrial waste flows will be discharged to the sanitary sewer system when the municipal officials are convinced that these wastes will not adversely affect treatment processes at the municipal sewage treatment plant.

SAMPLING PROCEDURE

Samples were collected at selected locations from Oshawa Creek, Harmony Creek, and their associated tributaries. Samples were also obtained from the various municipal storm sewer outfalls and industrial waste outfalls. The locations of sampling points are shown on the appended map of the City of Oshawa.

It is noted that samples were collected from outfalls which were immediately evident and where flows were active. There may be instances where outfalls are submerged or otherwise obscured, and thus might have been inadvertently omitted. For this reason, intensive sampling of the watercourses was performed in order to segregate possible zones of pollution.

Seasonal weather conditions prevailed during this survey. A

slight period of precipitation occurred during the afternoon of November 12.

INTERPRETATION OF LABORATORY RESULTS

The analyses employed in this investigation to assess the quality of outfall discharges and surface waters were: biochemical oxygen demand (BOD), suspended solids, the total coliform count, as well as other specific tests.

The BOD of sewage, industrial wastes or polluted waters, is the oxygen required during stabilization (natural purification in a stream) of the decomposable organic or chemical material by aerobic biochemical action. A five-day BOD determination with incubation at 20 degrees Centigrade is reported. A high BOD is indicative of organic or chemical pollution. A desirable upper limit in surface water is four (4) parts per million (ppm).

Suspended solids are reported in parts per million and indicate the measure of undissolved solids of organic or inorganic nature.

The total coliform count is employed to obtain an enumeration of coliform organisms, and the number is reported per 100 millilitres (ml.) of the sample. The membrane filter technique was used in the examination of these samples. A maximum limit of 2,400 coliform organisms per 100 ml. is the OWRC objective for the bacteriological quality of surface water in Ontario.

Additional specific analyses were performed, when deemed necessary, to evaluate other aspects of water quality. Some of these analyses include tests for the presence of chrome, phenolic equivalents, cyanide, as well as pH values. Chrome is highly toxic and in concentrations of 0.1 ppm may kill trout after long exposure. The presence of phenols (or phenolic equivalents) in surface waters should not exceed 5.0

parts per billion. The pH value, for practical purposes, refers to acidity or alkalinity, and is a measure of intensity rather than of quantity. The pH scale extends from zero (very acidic) to 14 (very alkaline), with the middle value of 7 corresponding to neutrality at 25° Centigrade. The pH of surface water should be in the range of 6.7 to 8.5.

SAMPLE RESULTS

The laboratory results of analyses and examinations performed on the samples collected are shown in appendices to this report as follows:

Table I - stream and outfall samples pertaining to Oshawa Creek

Table II - stream and outfall samples pertaining to Harmony Creek.

Oshawa Creek

According to the laboratory tests which were performed, satisfactory conditions were revealed in the waters of Oshawa Creek near the harbour mouth. It is possible, however, that the creek waters at this location were receiving some benefit of dilution by the water of Lake Ontario.

Flows in the St. Julian drain combine with those of Oshawa Creek at the harbour. This drain is tiled north of Bloor Street and conducts sanitary and industrial waste flows from Oshawa. The necessity for excluding objectionable wastes from this drain is obvious. A negligible coliform content was revealed in the limited volume of flow from the Conant Street municipal storm sewer to the west bank of the St. Julian drain.

The effects of industrial waste discharges from the Robson Leather Company Limited plant to Oshawa Creek were revealed in the watercourse at Simcoe Street and became more acute at Thomas Street which is closer to the plant outfalls. Extremely adverse conditions were

evident in the creek at Thomas Street.

Immediately upstream from the Robson Leather Company Limited plant outfalls, the quality of the watercourse was satisfactory (at sampling point 0.2.15).

A high coliform content was revealed in the waters of Oshawa Creek at Highway 401 (sampling point 0.2.7).

Excessive coliform contents were revealed in Goodman Creek, a tributary which flows in a southerly direction through the north-western part of the city, then veering east to empty into Oshawa Creek in the central part of Oshawa. A major source of this pollution obviously is the municipal storm sewer outfall (sampling point OG.4.7W) which is located on the east bank of Goodman Creek at the north side of King Street. However, a high coliform content was still evident in Goodman Creek upstream from the outfall.

At King Street (sampling point 0.3.9.) a substantial coliform content was revealed, as was the presence of phenol.

Due to the inaccessability of two municipal storm sewer outfalls located beneath the bridge at Bond Street (an outlet being located at the west side and at the east side of the bridge), samples were obtained from the creek both at the north side of the bridge and at the south side in order to reveal any effects resulting from the outfall flows. The pertinent stream sample results indicate that phenolic waste was gaining access to the creek at this location. The presence of iron was indicated in the creek at the south side of the bridge. (During the 1958 survey, iron had been revealed in both of the storm sewer outfalls at this location.) Coliform contents in excess of OWRC objectives were revealed in the creek water at both sides of the bridge.

Satisfactory conditions with respect to sanitary quality were

revealed in Oshawa Creek at Rossland Road (sampling point 0.5.5) and at Taunton Road (sampling point 0.7.0).

A high coliform content was evident in the east branch of Oshawa Creek at Simcoe Street North (sampling point OE.7.9) which is located slightly upstream from the city limit. It is possible that this high coliform content can be attributed to inadequate sewage disposal systems in this area where such facilities are provided on a private basis.

Harmony Creek

High 5-day BOD and coliform contents were revealed in the waters of Harmony Creek downstream from the municipal sewage treatment plant outfall. Although a normal degree of operational efficiency for this type of sewage treatment plant generally is attained, the sluggish flows in this section of Harmony Creek do not permit the rapid dilution of the plant effluent that would be expected in a stream where flows are greater. It is evident that effluent chlorination was not being practised, this procedure being effected at the plant only during summer months.

Satisfactory conditions were generally evident in the upper sections of Harmony Creek and its tributaries within the City of Oshawa although it is obvious that some objectionable wastes still are discharged thereto within the city. These outfalls are described in the following section of this report which makes reference to municipal drainage discharges.

MUNICIPAL STORM SEWER OUTFALLS

The laboratory results pertaining to "grab" samples collected during this survey indicate the presence of offensive wastes in the discharges from 12 municipal storm sewer outlets at the following locations:

(Outfalls pertinent to Oshawa Creek)

Sampling Point 0.2.2W

This municipal storm sewer extends from the foot of Whiting Street to the east bank of Oshawa Creek and obviously conducts some industrial wastes such as chrome and phenol to the watercourse.

Sampling Point 0.2.3W

This storm sewer extends from Conant Street to the east bank of Oshawa Creek. A high coliform content and traces of chrome and copper were revealed in this outfall.

Sampling Point 0.2.6E

An excessive coliform content was revealed in the discharge from this municipal storm sewer outlet which is located on the east bank of Oshawa Creek at Bloor Street.

Sampling Point OG.4.7W

The excessive 5-day BOD and coliform contents reveal the presence of sanitary sewage in this outfall which is located on the east bank of Goodman Creek at the north side of King Street (Highway 2).

Sampling Point 0.3.5W

This municipal storm sewer outfall is located on the west bank of Oshawa Creek at the south side of Gibb Street. Reportedly, a new sanitary sewer has been installed on Gibb Street and all of the residences have been connected thereto except for two houses. The recent sample results reveal the presence of sanitary waste in this outfall.

Sampling Point 0.3.6W

As was indicated during the 1958 survey, sewage flows discharge to Oshawa Creek from this municipal storm sewer outlet which is located on the east bank of the watercourse at the north side of John Street.

Sampling Point 0.3.9W

This municipal storm sewer outlet is located on the east bank of

Oshawa Creek just south of King Street. Excessive 5-day BOD and coliform contents were revealed in the discharge from this sewer outlet to the creek.

Sampling Point 0.4.4W(E)

A high coliform content was revealed in the discharge from this municipal storm sewer outlet which is located on the east bank of Oshawa Creek north of Adelaide Avenue.

Sampling Point 0.5.5W(E)

This sampling point is located where a municipal storm sewer terminates on the east bank of Oshawa Creek at Rossland Road. An excessive coliform content was revealed in the discharge from this sewer outlet.

(Outfalls Pertinent to Harmony Creek)

Sampling Point H.1.8W

The Dean Avenue storm sewer discharges to a ditch which continues thence to Harmony Creek. Samples were obtained from this ditch at Bloor Street, and contained a high coliform content. However, the quality of these flows has improved since the 1958 survey due to the corrective action obtained by the city officials. This storm sewer serves as a relief sewer for the St. Julian drain with respect to areas lying north of King Street in the vicinity of Ritson Road.

Sampling Point HWO.5.6W

This municipal storm sewer outfall is located on the west bank of the north-west branch of Harmony Creek near the corner of Robert Street and Grierson Street. The sample results suggest the presence of domestic sewage in this outfall although municipal investigations have not yet been successful in locating the source or sources of such waste.

Sampling Point HWO.6.OW

Five-day BOD and coliform contents in excess of desirable limits were revealed in the outfall from the storm sewer which is located on the bank of the north-west branch of Harmony Creek at Simcoe Street near Nonquon Road.

The foregoing list of municipal storm sewer outfalls, where the presence of waste was indicated, does not include the two municipal outfalls at Bond Street. Although local action has been taken to improve the quality of flows from these two outlets, these potential sources of pollution should not be disregarded.

Industrial Waste Outfalls

The Robson Leather Company Limited continues to discharge industrial wastes of an objectionable quality to Oshawa Creek, as may be observed by making reference to the laboratory results shown in Table I. In co-operation with the City of Oshawa and the Industrial Wastes Branch of the OWRC, this firm is devising methods of adequate preliminary waste treatment which should enable the city to accept this waste into the municipal sanitary sewer system.

Samples were obtained from the drain which extends from the General Motors Limited assembly plant in the south-western part of Oshawa. This drain flows in a southerly direction along Stevenson Road and then veers in a south-westerly direction toward Lake Ontario. The samples were obtained at the point designated on the appended map as GMD, which is located where this drain flows under Stevenson Road. These flows appear to be generally uncontaminated. A slight trace of copper was revealed by the laboratory tests.

COMPARISON OF OWRC SURVEY RESULTS IN 1958 AND 1963

In comparing the results of samples obtained in 1958 with those

obtained in 1963 it must be emphasized that, during both periods of investigation, only "grab" samples were collected. Composite sampling might, in some instances, reveal varying intensities of pollution. "Grab" samples, however, reveal conditions at the specific time of sampling and serve as fairly reliable indicators.

With respect to Oshawa Creek, these waters continue to be adversely affected in quality by the industrial waste flows discharged from the Robson Leather Company Limited plant. Objectionable wastes still discharge from several municipal storm sewer outlets to the watercourse. The St. Julian drain still conducts offensive wastes to the harbour. The sanitary quality of Goodman Creek appears to have deteriorated.

Conditions pertaining to Harmony Creek have improved. The city has been successful in eliminating a great deal of the objectionable discharges from the Dean Avenue storm sewer. Sewage flows which formerly were discharged from Maracle Press and adjacent premises to Harmony Creek have been diverted to a municipal sanitary sewer which was installed subsequent to the 1958 survey.

ACTION TAKEN BY CITY OF OSHAWA

The City of Oshawa deserves credit for the progressive attitude and positive action taken by the local officials in their water pollution control program. These officials propose to continue their investigations in order to exclude contaminants from all municipal storm sewers, to undertake further investigations concerning the Dean Avenue storm sewer, and to commence a survey of the St. Julian drain. In addition, they are extending assistance to the Robson Leather Company Limited in order to assist this firm in solving its industrial waste disposal problems.

SUMMARY

Investigations were performed at the City of Oshawa by Commission

staff on November 7, 12, and 13, 1963, in order to review conditions disclosed by the previous municipal sanitary survey which had been conducted in 1958. Samples were collected from the waters of Oshawa Creek, Harmony Creek, and from pertinent outfalls.

The most significant sources of objectionable wastes which result in adverse effects on the quality of the waters of Oshawa Creek are the Robson Leather Company Limited plant and several municipal storm sewer outfalls. The industrial waste discharges from the Robson Leather Company Limited plant obviously result in the severe degradation of stream quality. This firm is attempting to solve its waste disposal problem by providing preliminary waste treatment of such adequacy that the flows may be discharged to the municipal sanitary sewers.

The waters of Harmony Creek were of satisfactory quality upstream from the municipal sewage treatment plant outfall although some objectionable discharges to the creek still exist.

The City of Oshawa is pursuing an active water pollution control program.

RECOMMENDATIONS

Progressive action should be continued at Oshawa in order to terminate the discharging of untreated or inadequately treated wastes to watercourses.

MUNICIPAL SANITARY SURVEY OF THE CITY OF OSHAWA

TABLE I
(SAMPLES PERTINENT TO OSHAWA CREEK)

N.B. ALL ANALYSES EXCEPT PH ARE REPORTED IN
PARTS PER MILLION UNLESS OTHERWISE INDICATED.

SAMPLES COLLECTED BY A. R. COLES
R. BARRENS

SAMPLE POINT NO.	DATE 1963	DESCRIPTION OF SAMPLING POINTS	5-DAY BOD (PPM)	SOLIDS (PPM)			TOTAL COLIFORM COUNT PER 100 ML.	PH	CHROME AS CR. (PPM)
				TOTAL	SUSP.	DISS.			
0.0.0	Nov. 12	OSHAWA CREEK AT MOUTH	2.0	256	12	244	1,100		
0S.0.5	Nov. 12	ST. JULIAN DRAIN AT HARBOUR ROAD ARSENIC-0.0 PHENOLS IN PPB-20.0 ETHER SOLUBLES-TRACE	15.	678	26	652	19,000	7.2	0.02
0S.1.3W	Nov. 12	CONANT STREET STORM SEWER - TO WEST BANK OF ST. JULIAN DRAIN	-	-	-	-	700		
0S.1.5	Nov. 12	ST. JULIAN DRAIN AT BLOOR STREET PHENOLS IN PPB-50 LEAD AS PB-0.4 ETHER SOLUBLES-155 ALKALINITY AS CaCO3-112	62	1200	688	512	1,000	6.9	
0.0.4	Nov. 12	OSHAWA CREEK AT SIMCOE STREET SOUTH	9.8	426	10	416	6,000		
0.1.4	Nov. 12	OSHAWA CREEK AT THOMAS STREET NITRITE-TRACE NITRATE-TRACE FREE NH3 AS N-6.4 TOTAL KJELDAHL N.-13	72.	880	72	808	4,000	8.6	0.50
0.2.1-1-I	Nov. 12	SOUTH OUTFALL FROM ROBSON LEATHER COMPANY PLANT PHENOLS IN PPB-10 NITRITE-0.04 NITRATE-0.15 ALKALINITY AS CaCO3-244 FREE NH3 AS N-1.5 TOTAL KJELDAHL-1.7	17.	584	24	560	2,900,000	8.0	0.02

TABLE 1 CONT'D.

SAMPLE POINT NO.	DATE 1963	DESCRIPTION OF SAMPLING POINTS	5-DAY BOD (PPM)	SOLIDS (PPM)			TOTAL COLIFORM COUNT PER 100 ML.	PH	CHROME AS CR. (PPM)
				TOTAL	SUSP.	DISS.			
0.2.1-2-I	Nov. 12	MIDDLE OUTFALL FROM ROBSON LEATHER COMPANY PLANT NITRITE-TRACE NITRATE-TRACE ALKALINITY AS CaCO ₃ -1190 FREE NH ₃ AS N-82 TOTAL KJELDAHL N-200	880.	8124	571	7553	0	11.7	1.9
0.2.1-3-I	Nov. 12	NORTH OUTFALL FROM ROBSON LEATHER COMPANY PLANT PHENOLS IN PPB-300 ALKALINITY AS CaCO ₃ -220 ANIONIC DETERGENTS AS AB5-3.5	16.	714	173	547	1,390,000	7.2	0.04
0.2.15	Nov. 12	OSHAWA CREEK UPSTREAM FROM ROBSON LEATHER COMPANY PLANT	2.1	252	2	250	50		
0.2.2W	Nov. 12	STORM SEWER FROM WHITING STREET PHENOLS IN PPB-30 CYANIDE AS HCN=0	2.1	262	2	260	30	8.1	0.05
0.2.3W	Nov. 12	STORM SEWER FROM CONANT STREET TO OSHAWA CREEK CYANIDE AS HCN=0 COPPER AS CU-TRACE LESS THAN 0.05	1.8	437	7	430	70,000		0.15
0.2.6W(W)	Nov. 12	STORM SEWER TO WEST BANK OF CREEK AT BLOOR STREET			NO FLOW				
02.6.W(E)	Nov. 12	STORM SEWER TO EAST BANK OF CREEK AT BLOOR STREET	1.3	332	6	326	103,000		
0.2.7	Nov. 12	OSHAWA CREEK AT HWY. 401	2.0	332	3	329	41,000		
06.3.4	Nov. 12	GOODMAN CREEK AT NASSAU STREET	3.0	438	5	433	34,000		

TABLE 1 CONT'D.

SAMPLE POINT NO.	DATE 1963	DESCRIPTION OF SAMPLING POINTS	5-DAY BOD (PPM)	SOLIDS (PPM)			TOTAL COLIFORM COUNT PER 100 ML.	PH	CHROME AS CR. (PPM)
				TOTAL	SUSP.	DISS.			
OG.4.7W	Nov. 12	STORM SEWER TO EAST BANK OF GOODMAN CREEK - NORTH SIDE OF KING STREET	82.	570	98	472	120,000		
OG.4.7	Nov. 12	GOODMAN CREEK AT NORTH SIDE OF KING ST.	1.6	414	1	413	17,000		
0.3.5W	Nov. 12	STORM SEWER TO WEST BANK OF CREEK - SOUTH SIDE OF GIBB STREET	18	278	5	273	1,890,000		
0.3.6W	Nov. 12	STORM SEWER TO EAST BANK OF CREEK - NORTH SIDE OF JOHN STREET	33	592	8	584	16,300		
0.3.9W	Nov. 12	STORM SEWER TO EAST BANK OF CREEK - SOUTH SIDE OF KING STREET	78	768	25	743	33,000		
0.3.9	Nov. 12	OSHAWA CREEK AT KING STREET CYANIDE AS HCN-0 PHENOLS IN PPB-8	2.7	328	8	320	3,300		0.0
0.4.0.S	Nov. 12	OSHAWA CR. AT SOUTH SIDE OF BOND ST. IRON AS FE-0.40 PHENOLS IN PPB-18 ETHER SOLUBLES-TRACE	3.9	386	1	385	5,700	8.2	
0.4.0.N	Nov. 12	OSHAWA CREEK AT NORTH SIDE OF BOND ST. PHENOLS IN PPB-0	1.9	306	1	305	10,700	8.5	
0.4.4.W(W)	Nov. 12	STORM SEWER TO WEST BANK OF CREEK - SOUTH SIDE OF ADELAIDE AVENUE	2.0	878	40	838	1,400		
0.4.4.W(E)	Nov. 12	STORM SEWER TO EAST BANK OF CREEK - NORTH SIDE OF ADELAIDE AVENUE	3.1	482	1	481	22,700		
0.5.5W(W)	Nov. 12	STORM SEWER TO WEST BANK OF CREEK AT ROSSLAND ROAD	1.5	612	20	592	290		
0.5.5.W(E)	Nov. 12	STORM SEWER TO EAST BANK OF CREEK AT ROSSLAND ROAD	2.3	528	10	518	900,000		

TABLE 1 CONT'D.

SAMPLE POINT NO.	DATE 1963	DESCRIPTION OF SAMPLING POINTS	5-DAY BOD (PPM)	SOLIDS (PPM)			TOTAL COLIFORM COUNT PER 100 ML.	PH	CHROME AS CR. (PPM)
				TOTAL	SUSP.	DISS.			
0.5.5	Nov. 12	OSHAWA CREEK AT ROSSLAND ROAD	2.2	290	2	288	224		
	Nov. 13		1.7	314	7	307	170		
0.7.0	Nov. 13	OSHAWA CREEK AT TAUNTON ROAD	2.0	292	8	284	300		
0E.7.9	Nov. 13	EAST BRANCH OF OSHAWA CREEK AT SIMCOE STREET NORTH	2.0	300	6	294	40,000		
<u>TO LAKE ONTARIO</u>									
GMD	Nov. 13	DRAIN FROM GENERAL MOTORS LTD. ASSEMBLY PLANT AT STEVENSON ROAD CYANIDE AS HCN=0 COPPER AS CU-TRACE LESS THAN 0.05	4.0	278	18	260	330		

MUNICIPAL SANITARY SURVEY OF THE CITY OF OSHAWA

TABLE 11
(SAMPLES PERTINENT TO HARMONY CREEK)

SAMPLES COLLECTED BY M. HOLY

SAMPLE POINT NO.	DATE 1963	DESCRIPTION OF SAMPLING POINTS	5-DAY BOD (PPM)	SOLIDS (PPM)			TOTAL COLIFORM COUNT PER 100 ML.	PH
				TOTAL	SUSP.	DISS.		
H.0.0	Nov. 12	HARMONY CREEK AT MOUTH	18	490	46	444	243,000	
H.0.9T	Nov. 12	OUTFALL FROM OSHAWA SEWAGE TREATMENT PLANT	54	520	34	486	257,000	
HF.1.6	Nov. 12	FAREWELL CREEK AT HWY. 401	2.3	306	1	305	193	
HF.2.6	Nov. 12	FAREWELL CREEK AT TOWNLINE ROAD SOUTH	3.8	302	1	301	73	
H.1.7	Nov. 12	HARMONY CREEK AT HWY. 401	2.6	400	8	392	1,490	
H.1.8W	Nov. 12	DEAN AVENUE STORM SEWER AT BLOOR STREET PHENOLS IN PPB=0 CHROME AS CR.=0	3.4	346	1	345	19,800	7.9
H.2.5	Nov. 12	HARMONY CREEK BELOW JUNCTION WITH WEST BRANCH	2.4	490	4	486	2,600	
H.4.2	Nov. 12	HARMONY CREEK AT TOWNLINE ROAD NORTH	1.7	432	1	431	3,100	
HW.3.4	Nov. 12	WEST BRANCH OF HARMONY CREEK AT KING STREET EAST	2.1	540	13	527	2,900	
HW.4.8	Nov. 12	WEST BRANCH OF HARMONY CREEK AT ROSSLAND ROAD	1.9	357	1	356	2,500	
HW0.3.7	Nov. 12	NORTH-WEST BRANCH OF HARMONY CREEK AT WILSON ROAD NORTH NEAR COLBORNE STREET	2.1	614	2	612	1,100	
HW0.4.1D	Nov. 12	DITCH TO NORTH-WEST BRANCH - OPPOSITE IDEAL DAIRY - AT RITSON RD. N.	2.3	406	3	403	2,100	

TABLE 11 CONT'D.

SAMPLE POINT NO.	DATE 1963	DESCRIPTION OF SAMPLING POINTS	5-DAY BOD (PPM)	SOLIDS (PPM)			TOTAL COLIFORM COUNT PER 100 ML.	PH
				TOTAL	SUSP.	DISS.		
HWO.5.0	Nov. 12	NORTH-WEST BRANCH OF HARMONY CREEK AT RITSON ROAD NORTH	1.5	446	6	440	390	
HWO.5.6.W	Nov. 12	STORM SEWER TO NORTH-WEST BRANCH OF HARMONY CREEK AT ROBERT ST. AND GRIERSON STREET. PHENOLS IN PPB-15	6.4	412	2	410	7,000	
HW.6.0	Nov. 12	NORTH-WEST BRANCH OF HARMONY CREEK AT SIMCOE STREET NEAR NONQUON ROAD	1.4	726	11	715	90	
HWO.6.0W	Nov. 12	STORM SEWER TO NORTH-WEST BRANCH AT SIMCOE STREET NORTH NEAR NONQUON ROAD	9.0	750	86	664	3,100	

TWP. OF WHITBY E.



L A K E O N T A R I O

LEGEND

- O-14 — SAMPLING POINT SHOWING STREAM AND MILEAGE
O-22 W — STREAM AND MILEAGE AT OUTFALL
— TYPE OF OUTFALL

OUTFALL SYMBOL LETTERS

- W — STORM SEWER
D — DITCH
T — SEWAGE TREATMENT PLANT OUTFALL SEWER
I — INDUSTRIAL WASTE SEWER

ONTARIO WATER RESOURCES COMMISSION

CITY OF OSHAWA
MUNICIPAL SANITARY SURVEY
1963

SCALE 0 1000 2000 3000 4000 FT

DRAWN BY H.G. DATE NOV. 1963

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